

### **REMARKS**

Reconsideration of the application in light of the amendments and the following remarks is respectfully requested.

Claims 1-51 are pending in this application. Claims 52-54 have been previously canceled. Claims 1-47 and 50 have been amended. No new matter has been added by this amendment.

#### **Objections to the Drawings**

The Examiner has objected to FIGs. 2 and 5 as containing shaded portions that are too dark, and to FIGs. 9 and 10 as being hand-drawn. Applicants herewith submit replacement drawings which correct the drawings as suggested by the Examiner. Applicants have also replaced FIGs. 1 and 7 to remove similar shading. Figures 4 and 7 have been replaced to provide larger lettering. No new matter has been added. Applicants request reconsideration and withdrawal of the objection to the drawings.

#### **Objections to the Claims**

Claims 1, 28 and 37 are objected to because the entire name of a device should be written the first time an acronym is used. Applicants have expanded expand “ICPT” to “inductively coupled power transfer” as suggested by the Examiner.

Claims 1-51 are objected to because the same component names must be used throughout the claims. The claims have been reworded consistently to refer to “pick-up resonant circuit” where that component is being referenced.

Applicants request reconsideration and withdrawal of the objections to the claims.

**Rejections Under 35 U.S.C. § 102**

The Examiner has rejected claims 1-5, 7-8, 16-20, 27-35, 37-43 and 45-46 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,898,579 to Boys *et al.* ("Boys I"). The Examiner contends that Boys I discloses a frequency monitor **510** that is the "controller configured to selectively tune or detune the pick-up in response to the load sensed by the sensor" recited in claim 1. The Examiner further contends that claims 27 and 37 also disclose a controller configured to selectively tune or detune based upon the load sensed by the sensor.

Applicants respectfully disagree with the Examiner and traverse. The frequency monitor referenced **510** in Boys I is used to ensure that the secondary resonant circuit **500** closely tracks the operating frequency of the primary circuit **501**. As set forth in column 5, lines 49 to 56, the frequency monitor **510** may comprise a phase locked loop i.e. it is intended to lock onto, or closely follow, the phase of the primary circuit **501** so that its function is not at all influenced by any load condition. This is reiterated in lines 55 to 57 in which it is clear that the switches "are switched by the controller so that the resonant frequency of the entire circuit **500** is caused to closely track the operating frequency of the primary circuit **501**".

The disclosure of Boys I teaches those skilled in the art that the primary circuit resonant needs to be monitored because movement of moveable bodies, such as electrically powered trolleys, powered by the primary circuit cause changes to the resonant frequency of the primary circuit. This is described in column 3, line 61 to 65 of Boys I. Also, as described in column 1, lines 54 to 58, the disclosure of Boys I is directed toward matching the secondary circuit resonance to that of the primary circuit to ensure a higher efficiency of power transfer.

Moreover, frequency monitor **510** does not sense the load, because the load is not part of secondary resonant circuit **500**. The load is not shown in figure 5. If the load was shown in that figure, then the load would be connected to the right of diode bridge rectifier **506** in figure 5.

The Examiner also contends that figure 6 of Boys I is relevant to independent claims 1, 28 and 37. Applicants respectfully submit that figure 6 of Boys I does not disclose a controller configured to selectively tune or detune the pickup in response to the load sensed by the sensor. As disclosed in column 5, lines 59 to column 6, line 4, the secondary circuit of figure 6 is a “dummy trolley” – i.e., the secondary circuit of figure 6 has no load. It is used as a line monitoring device and also to modify the characteristics of the primary circuit or loop (e.g., the primary loop resonance) (Boys I, col. 6, lines 14-18).

Applicants respectfully submit that element 613 which Examiner contends is a sensor configured to sense a condition of the load, is actually a test point “used to provide signals proportional to the resonant circuit current” (column 6, lines 20 to 22). The output from the test point is used by an unillustrated master controller “in order to tune the “dummy trolley” and thereby affect resonance in the primary circuit” (column 6, lines 14 to 22). The master controller is used as part of a line monitoring device (column 5, line 63 to 64), adjusting the resonant circuit to match shifts in the resonant frequency of the primary circuit (column 6, lines 40 to 45). No sensing of the load condition is disclosed.

Therefore, Applicants respectfully submit that claims 1, 28 and 37 are allowable over Boys I because Boys I does not disclose all the elements of claims 1, 28 or 37. Claims 2 to 5, 7 to 8, 16 to 20, 27, 29 to 35, 38 to 43 and 45 to 46 depend upon one of independent claims 1, 28 and 37. Accordingly, Applicants respectfully submit that these claims are also allowable by reason of their dependency upon an allowable base independent claim. Applicants request reconsideration and withdrawal of the rejection of claims 1-5, 7-8, 16-20, 27-35, 37-43 and 45-46 under 35 U.S.C. § 102(b) as anticipated by Boys I.

The Examiner has rejected claims 1-4, 28 and 37-39 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,892,300 to Rydval. The Examiner contends that Rydval discloses a control device 11, used as a “controller configured to selectively tune or detune the pickup in response to the load sensed by the sensor” recited in claim 1 and similarly in claims 28 and 37.

Applicants respectfully disagree with the Examiner. Rydval teaches tuning of the secondary circuit to match the frequency of the primary circuit (column 1, lines 28 to 39). Rydval does not disclose either a sensor configured to sense a condition of the load, or using the response of the load to selectively tune or detune the pickup resonant circuit. Rather, control device 11 is used to switch in and out additional capacitors as a way to change the tuning of a resonant circuit to match that of the primary circuit (column 3, lines 33 to 38).

Therefore, Applicants respectfully submits that claims 1, 28 to 37 are allowable over Rydval because it does not disclose all of the elements of claims 1, 28 or 37. Furthermore, as claims 2 to 4, and 38 to 39 depend on one of the independent claims 1, 28 and 37, Applicants submit that these claims are also allowable by reason of their dependency upon an allowable base independent claim. Applicants request reconsideration and withdrawal of the rejection of claims 1-4, 28 and 37-39 under 35 U.S.C. § 102(b) as anticipated by Rydval.

The Examiner has rejected claims 1-4 and 37-39 under 35 U.S.C. § 102(b) as anticipated by International Patent Publication WO 01/18936 to Boys *et al.*, which the Examiner has referred to as “Auckland”, but which we refer to herein as “Boys II”. In particular, the Examiner contends that supply 208 in Boys II is a sensor configured to sense a condition of the load, and that switch control means 207 in Boys II is a “controller configured to selectively tune or detune the pickup in response to the load sensed by the sensor by varying the effective capacitance or inductance of the capacitive or the inductive element of the pickup circuit” as recited in claim 1 and similarly in claim 37.

Applicants respectfully disagree with the Examiner and traverse. Boys II discloses the switch control means 207 as opening and closing a switch 203, forming a controllable duty cycle of switch 203, in order to control the average current and power to a load (page 7, line 20 to page 8, line 1).

The repetition rate of the series switch 203 is determined by control means 207 according to the ratio of  $I_0/D$ , wherein  $I_0$  is the current drawn by the load, and D is a fixed

capacitance. Capacitance D is largely fixed, because, first, it is used to provide smoothing of the voltage wave form from rectifier R (page 7, line 10) rather than used to tune the circuit of figure 2; secondly, figure 2 and the text related to that figure discloses no means for changing the value of capacitance D.

This is because the on/off control is determined by the difference between the actual output voltage detected and a predefined reference voltage (using Zener diode **213**), but the on/off repetition rate (switching frequency) is determined by  $I_0/D$

Accordingly, Applicants respectfully submit that the circuit of Boys II does not “[vary] the effective capacitance...of the capacitive ...element of the pickup circuit” as recited in claim 1. Claims 2 to 4 depend on claim 1, and should be allowable in reason of their dependency upon an allowable base dependent claim.

Applicants further respectfully submit that opening and closing switch **203** is not “tuning or detuning the pickup circuit depending upon the sensed load condition” as claimed in claim 37. Therefore, Applicants respectfully submit that claim 37 is allowable over Boys II because it does not disclose all the elements of claim 37. Claims 38 to 39 depend on claim 37, and should be allowable by reason of their dependency upon an allowable base independent claim.

For the foregoing reasons, Applicants request reconsideration and withdrawal of the rejection of claims 1-4 and 37-39 under 35 U.S.C. § 102(b) as anticipated by Boys II.

#### **Rejections Under 35 U.S.C. § 103**

The Examiner has rejected claims 6, 9-12, 21-23 and 30 under 35 U.S.C. § 103(a) as obvious over Boys I. Applicants respectfully disagree with the Examiner and traverse.

As set forth above, the rejected claims depend upon one of independent base claims 1 or 28. Applicants respectfully submit that Boys does not disclose all limitations recited in claim

1 and similarly in claim 28. The teaching of Boys is to maintain the frequency of the secondary resonant circuit the same as the frequency of the primary circuit in order for optimal power transfer. A separate and very different control strategy is then used to control the power delivered to a load. Therefore the teaching of Boys is simply to provide capacitance which allows the resonant pickup circuit to operate at the same frequency as the primary circuit. Accordingly, Applicants submit that it is not obvious to vary capacitance to tune the pickup “in response to the load sensed by the sensor” as recited in claim 1 because the circuits of figures 5 to 6 of Boys do not sense the load – instead they sense the resonance of the primary circuit. Applicants submit that claims 6, 9 to 12, 21 to 23 and 30 are allowable as dependent upon an allowable base independent claim.

For the foregoing reasons, Applicants request reconsideration and withdrawal of the rejection of claims 6, 9-12, 21-23 and 30 under 35 U.S.C. § 103(a) as obvious over Boys I.

The Examiner has rejected claims 13 to 15 and 24 to 25 under 35 U.S.C. § 103(a) as unpatentable over Boys I in view of the Applicants’ submitted prior art (“APA”). The Examiner contends that APA discloses that the switch device can comprise one or two switches. The Examiner further contends that Boys I discloses semi-conductor switches with anti-parallel diode connections and that it would have been obvious to apply these switches to the single switch of figure 6.

Applicants respectfully disagree with the Examiner and traverses. The rejected claims depend upon independent base claim 1. As discussed above, Boys I does not disclose all the limitations recited in claim 1. Applicants submit that claims 13 to 15 and 24 to 25 are allowable as dependent upon an allowable base independent claim. Applicants request reconsideration and withdrawal of the rejection of claims 13 to 15 and 24 to 25 under 35 U.S.C. § 103(a) as unpatentable over Boys I in view of APA.

The Examiner has rejected claims 24 and 26 under 35 U.S.C. § 103(a) as unpatentable over Boys I in view of the Applicants’ submitted prior art (“APA”). Applicants

respectfully disagree with the Examiner. The rejected claims depend upon independent base claim 1. As we have discussed above, Boys I does not disclose all the limitations recited in claim 1. Applicants submit that claims 24 and 26 are allowable as dependent upon an allowable base independent claim. Applicants request reconsideration and withdrawal of the rejection of claims 24 and 26 under 35 U.S.C. § 103(a) as unpatentable over Boys I in view of APA.

### CONCLUSION

Each and every point raised in the Office Action mailed November 14, 2008 has been addressed on the basis of the above remarks. In view of the foregoing it is believed that claims 1-51 are in condition for allowance and it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

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Respectfully submitted,

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